

General Facts About Coal

Coal is widely distributed throughout the United States, with 39% occurring in states east of the Mississippi River and 61% in western states and Alaska. Coal underlies 13% of total U.S. land area, encompassing some 458,000 square miles. Measurable quantities are found in 38 states; in 31 of them the coal is considered mineable, and mining operations currently take place in 28 states.

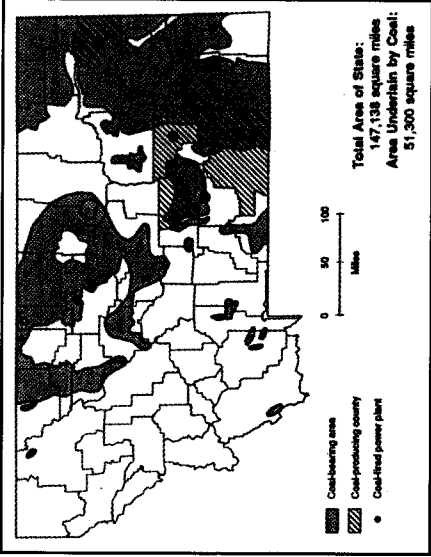
Thick, relatively flat coal beds at depths of less than 200 feet below the surface are particularly suitable for surface mining. Coal beds that dip or lie very deep beneath the surface generally must be extracted through underground mining methods. The Energy Information Administration estimates that about 32% of the total demonstrated reserve base can be mined with surface methods, with 75% of this coal located west of the Mississippi River. Conversely, 54% of the demonstrated reserve base coal requiring underground mining is located in states east of the Mississippi.

Coal in the U.S. is mined from about 400 beds or veins, but approximately 47% of annual production comes from only about 10 beds. Coal beds are generally flat lying, but may be inclined, folded or faulted as a result of geologic forces. Although the thickness of the coal beds mined ranges from less than 2 feet to about 100 feet, most of the mining is in beds 2-8 feet thick. The average thickness of coal beds mined is a little more than 4 feet in the Appalachian states, about 6 feet in the Midwest, and about 30 feet in the West.

State	Reserve Base (Billions of Tons)	Ranked by Reserve Base	2010 Production (Millions of Tons)	Ranked by Production
Montana	119.0	1	44.7	5
Illinois	104.2	2	33.2	8
Wyoming	61.0	3	442.5	1
West Virginia	31.7	4	135.6	2
Kentucky	29.1	5	104.4	3
Pennsylvania	26.9	6	58.0	4
Ohio	23.1	7	27.3	10
Colorado	15.9	8	25.2	11
Texas	12.1	9	41.6	6
New Mexico	12.0	10	21.0	12
Indiana	9.2	11	35.3	7
North Dakota	8.9	12	28.9	9
Alaska	6.1	13	2.2	14
Missouri	6.0	14	.5	15
Utah	5.2	15	19.3	13

\* Source: U.S. Energy Information Administration

Of the 15 major coal-producing states, Montana ranks first in coal resources and reserves with 119 billion tons. The Energy Information Administration estimates that 1 billion of those tons are presently recoverable reserves. This includes only coal that is mineable from producing coal mines. At the present rate of mining, approximately 40 million tons per year, Montana could sustain over 25 years of mining from presently mineable coal. In terms of the coal reserve base, if it all became mineable, and were mined at the current rate, it would sustain mining for nearly 3,000 years.



Surface Mining and Reclamation

Surface coal mining companies are required to reclaim and return mined land to a productive capacity that is equal to or better than before mining occurred.

The reclamation operation takes place concurrently with the mining operation. The first step taken is to remove the top soil from an area to be mined, stockpile it and stabilize it with temporary vegetation to prevent erosion.

The initial removal of overburden (the remaining material covering the coal) is called a box cut and the cavity that is left when the coal is removed will receive the overburden from the second cut. In most cases, a dragline is used to lift overburden from a new section and deposit it in the section that has just been mined. To loosen the overburden for the dragline, it is blasted. The coal is fractured in the same way and then removed by large loaders, deposited in coal haulers and transported to the mine storage and loading facility.

Once the dragline has deposited overburden over the mined-out cavity, bulldozers smooth it out and contour it to blend with the surrounding landscape. This process is much like that employed in construction projects. After that, reclamation becomes very similar to any farming operation. The soil is scarified to guard against erosion, top soil is replaced and the area is planted with seed mixtures that are prescribed by the regulatory agency. In some cases, ponderosa pine and other woody plants are part of the approved reclamation plan. Companies may apply a fiber mulch to further protect against erosion and while fertilizer may be used during the early growing seasons, irrigation has not been necessary.

Before any company is permitted to mine, it is required to post a bond sufficient to cover the cost of reclamation if an operator fails with his reclamation efforts. That bond is not released until successful reclamation is verified. Based on precipitation rates in the West, the law dictates that, in no case, can the bond be released sooner than ten years from the date of seeding.

Royalties

Unlike a tax paid to government on the production of coal or its realized profits, royalties are a monetary payment to the owner of the coal as agreed upon in the terms of pre-mining leases. State and federal government still are major beneficiaries of these payments, however, because a large percentage of the mineral right ownership of coal in Montana has been retained by the federal government, with payments from the coal producing school sections going to the state. In addition, the 1976 federal leasing law mandates that 50 percent of the royalties collected from development of federal leases be returned to the state. Other coal lessors include Indian tribes and private (or fee) owners.

Best Available Figures for Cumulative Royalty Payments from Montana Surface Mining Operations Through December, 2011

Company	Federal	State	Indian	Private	Total
Signal Peak				28,589,914	28,589,914
Decker Coal	374,805,716	63,528,072		118,683,352	557,017,140
Spring Creek	261,029,727	46,044,232		19,884,354	326,958,313
Western Energy	266,491,355	5,014,932		168,420,261	439,926,548
Westmoreland		4,617,797	\$118,923,324	953,442	124,494,563
Resource1					
Westmoreland Savage	4,085,471			1,363,326	5,488,797
	\$906,412,269	\$119,205,033	\$118,923,324	\$337,894,649	\$1,482,435,275

\* Source: Individual Companies

Production, Employment and Payroll

Montana's surface mining industry furnishes some of the highest-paying and most-sought-after jobs in the state.

	2011 Coal Production (Million tons)	Number of Employees	Estimated Payroll
Signal Peak Energy	5.14	255	16,700,000
Decker Coal Co.	3.04	159	9,200,000
Spring Creek Coal Co.	19.08	245	21,770,000
Western Energy Co.	8.78	370	27,128,000
Westmoreland Resources	5.56	155	11,054,000
Westmoreland Savage	.35	15	906,000
	41.95	1,199	\$86,758,000

Source: Individual Companies

Production and Value

The following chart shows production for 2002 through 2011. The price per ton at the various sites depends on the quality of coal (heating value, moisture content, sulfur and ash content, etc.) but an average for Fiscal Year 2011 was \$111.33 per ton making the value of that coal over \$475 million. The price is established by the Department of Revenue after three state and two federal taxes are deducted.

Year	Coal Production Million Tons
2002	37.3
2003	37.0
2004	40.1
2005	40.6
2006	41.8
2007	43.2
2008	44.9
2009	39.6
2010	44.7
2011	42.0

\* Source: Department of Labor & Industry, Safety Bureau

PM<sup>10</sup> Emissions (Respirable-Size Particulates)

Comparison Between

Colstrip Units 1-4 and Montana Wildfire

Wildfire puts out over 1,000 pounds of PM<sup>10</sup> per acre. In the year 2000, 965,000 acres burned in Montana resulting in 482,000 tons of PM<sup>10</sup> in the air. Colstrip Units 1-4 emit 255 tons/year of PM<sup>10</sup>. PM<sup>10</sup> emitted by wildfires in Montana in the year 2000 is equal to 1,892 years of Colstrip Units 1-4.

Sources: North Elkhorns Environmental Assessment, Helena National Forest, & Montana Department of Environmental Quality

This brochure was prepared by the staff of the Montana Coal Council with the assistance of informational sources quoted. The Montana Coal Council is a trade association whose members are involved in the production of coal in Montana. We support realistic state and national environmental and social standards. The council also recognizes the need for a federal energy policy that will lead to the development of domestic energy sources and reducing this nation's dependence on foreign oil.

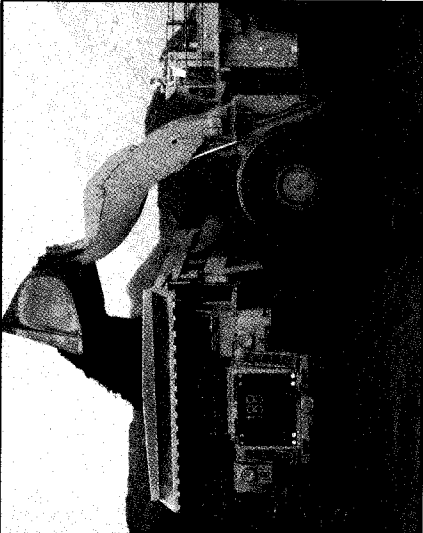
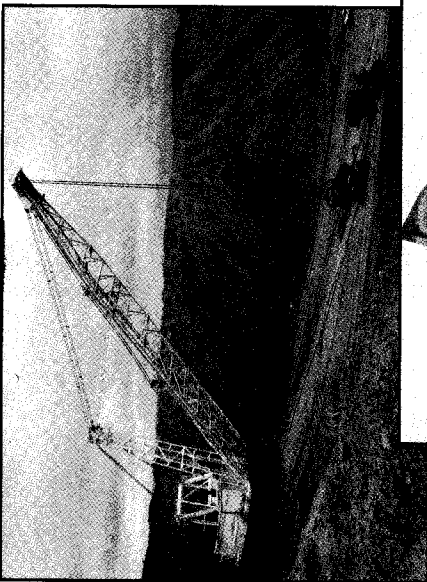
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# Montana Coal 2012

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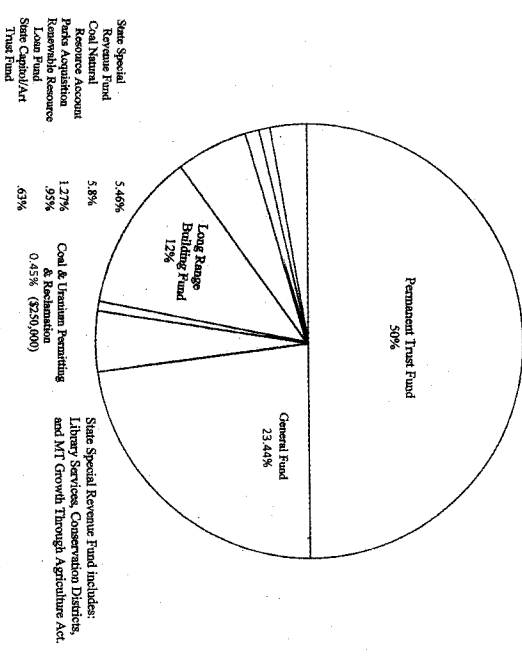
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Every ton of Montana coal replaces 3 1/2 barrels of foreign oil.

MONTANA COAL TAX DISTRIBUTION
Source: 15-35-108, MCA



1. The Severance Tax - Prior to 1975, Montana's coal severance tax was assessed on a cents-per-ton basis. In 1975 the Legislature enacted the highest severance tax in the nation, based on percentage of the mine-month price of the coal. The percentage was tied to the heating quality of the coal - 30 percent for subbituminous and 20 percent for lignite. However, the 1987 Legislature enacted a law to gradually reduce the taxes on coal in 5 percent increments over the next few years if a target tonnage of 32.2 million tons was produced in Fiscal Year 1988. That target was met, and the tax dropped to 25 percent on July 1, 1988; to 20 percent on July 1, 1990; and to 15 percent on July 1, 1991.

Table with 2 columns: FY (Fiscal Year) and \$ (Amount). Rows include FY 1975/76 through FY 2010/11, showing a general downward trend in revenue from over \$23 billion in 1975 to around \$4 billion in 2010.

Earmarked Fund Allocations 1975/76 through 2010/11

Table with 2 columns: Fund Name and Amount. Lists various earmarked funds such as Permanent Coal Trust Fund, State Special Revenue Fund, Long Range Building Program, and others, with their respective allocations.

\* Source: Montana Department of Revenue
The above figures do not include coal severance taxes paid since 1988 by Westmoreland Resources Inc. on coal owned by the Crow Tribe. WRI pays coal severance taxes and gross proceeds taxes directly to the Crow Tribe and not to the state of Montana or the county.

Major Holders of U.S. Coal Reserves-2010
(billion short tons)

Table with 3 columns: Holder, Estimated Reserves, and Operating Company. Lists major coal reserve holders like U.S. Government, Great Northern Properties, and Arch Coal, Inc., along with their estimated reserves and operating companies.

\* Source: National Mining Association

15 Largest U.S. Surface Coal Mines, 2010
(million short tons)

Table with 5 columns: Mine Name, State Located, 2010 Tonnage, Operating Company, and Location. Lists the 15 largest U.S. surface coal mines, including Black Thunder, North Antelope, and Condero Rojo.

\* Source: National Mining Association

Did You Know?

- The average train load of coal in Montana is assessed approximately \$30,800 in federal, state, and local taxes.
- Coal provides close to one half of the total amount of electricity used in the United States each day.
- Regulated emissions from coal-based electricity generation have decreased overall by over 50% since the 1970s while coal use has tripled, according to government statistics.
- Coal is the most affordable source of power fuel per million Btu, averaging less than one-quarter the price of petroleum and natural gas.
- The coal industry routinely reclaims thousands of acres of mined lands each year, returning them to productive use in the ecosystem.
- Coal is actually "buried sunshine," because it originated from prehistoric plants that lived some 300 million years ago.
- Coal accounts for about 94% of America's fossil energy reserves and is larger than either world petroleum or natural gas reserves, when measured in terms of oil equivalency.
- The largest coal producing state is Wyoming, with nearly 438 million tons of coal in 2011.
- Coal provides employment for nearly 135,000 miners directly, with an additional 3.5 jobs created throughout the economy for each miner's job (electric utilities, transportation, manufacturing, etc.).

Glossary of Coal Terms

- Anthracite** - Called hard coal, highest rank of economically usable coal. Has a large heating value of 15,000 Btu; carbon content of 86-97%; and moisture content of less than 15%. Used primarily for space heating and generating electricity. Anthracite coal deposits total some 7 billion tons and are located primarily in Pennsylvania.
- Bitu** - British thermal unit. A measure of the energy required to raise the temperature of one pound of water one degree Fahrenheit.
- Bituminous** - Called soft coal, most common type. Has a heating value of 10,500-15,500 Btu; carbon content of 45-86%; and moisture content usually less than 20%. Mined chiefly in Appalachia and Midwest. Reserves are widely scattered across the country and total some 238 billion tons.
- Coal Resources** - Total coal deposits, regardless of whether they can now be mined or recovered. The U.S. may have as much as 4 trillion tons of coal resources, according to the U.S. Geological Survey.
- Coal Seam** - A bed or stratum of coal, usually applied to large deposits of coal.
- Coal Washing** - The process of separating coal of various sizes, densities and shapes by allowing them to settle in a fluid.
- Demonstrated Reserves** - Coal deposits which are potentially mineable on an economic basis with existing technology. The U.S. Energy Information Administration estimates that there are about 494.1 billion tons of demonstrated reserves in the U.S.
- Fossil Fuel** - Any naturally occurring fuel of an organic nature, such as coal, crude oil and natural gas.
- Gasification** - Any of various processes by which coal is turned into low, medium, or high Btu gases.
- Lignite** - Brownish-black coal with generally high moisture content and lower heating value (4,000-8,300 Btu). Carbon content of 25-35%; moisture sometimes as high as 45%. Demonstrated reserves of 45 billion tons are mined primarily in Louisiana, Montana, North Dakota and Texas. Mostly used to make electricity at power plants located relatively close to the coal mine.
- Liquefaction** - Converting coal into synthetic liquid fuel, similar in nature to crude oil and/or refined products such as gasoline.
- Magnetohydrodynamics** - Also known as MHD. Coal and preheated air are fired in a low-resistance time burner at very high temperatures. Potassium salts are added, producing a gas of high conductivity. The gas is then passed through a magnetic field, producing electricity. This process is still in the research stage.
- Mine-Mouth Plant** - Commonly a steam-electric plant built close to a coal mine which delivers its electricity output to a distant point by transmission lines.
- Recoverable Reserves** - The amount of coal that can be recovered from the demonstrated reserve base. The recovery factor for surface mines is about 80-90% and for underground mines about 60%. Using these percentages, there are about 296.5 billion tons of recoverable reserves in the U.S., enough to last more than 250 years at current production levels.
- Scrubber** - Any of several forms of chemical-physical devices which operate to remove sulfur compounds formed during coal combustion. These devices combine the sulfur in gaseous emissions with another chemical medium to form inert "sludge," which must then be removed for disposal.
- Slurry Pipeline** - Pipeline for transporting viscous mixture of coal and liquid medium. Only one such line, a 273-mile system from Arizona to Nevada, is currently operating, although several others have been proposed. Water is the medium now is use, but experiments with oil, liquid methane or carbon dioxide show promise of increased efficiency and reduced environmental concerns in areas where water supplies are scarce. These pipelines might also be used for short-haul transport, such as from a port facility to a nearby power plant, reducing or eliminating the need for large stockpiles of coal.
- Subbituminous** - Dull black coal with heating value ranging between 8,300-11,500 Btu; carbon content, 35-45%; and moisture content, 20-30%. Demonstrated reserves total about 180 billion tons and are located in Montana, Wyoming, Colorado, New Mexico, Washington and Alaska. Primarily used for generating electricity and for space heating.
- Tons** - A short or net ton is equal to 2,000 pounds; a long ton or British ton is 2,240 pounds; a metric ton is approximately 2,205 pounds.
- Unit Train** - Long train of 60-150 hopper cars carrying only coal between a mine and a customer. A typical unit train can carry at least 10,000 tons of coal in a single shipment.